

# A Toolkit for Nanomaterial Design



Sara Skrabalak

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## CURRENT RESEARCH

### "Shaping" the synthesis of nanoscale materials

There is a general need for materials by design. That is, if we understand how crystallite size and shape combine with composition to express a particular property, it should be possible to identify specific nanoscale structures with properties desirable for an application. However, to realize the possibility of materials by design, the synthetic toolkit must exist to achieve the desired material as crystals with a high level of structural precision. Dr. Sara Skrabalak, James H. Rudy Professor of Chemistry at Indiana University, is building that toolkit. Additionally, she and her team's understanding of structure-function relationships can ultimately lead to materials with enhanced properties in catalysis, solar energy conversion, chemical sensing, biomedical applications, and more.

Few groups are capable of achieving the high level of structural precision demonstrated by Dr. Skrabalak's team. Moreover, her work provides a paradigm in which to approach nanomaterial synthesis and design which should be generally translatable to new systems. In this way, Dr. Skrabalak hopes to move beyond the trial and error approach and really design materials that can make an impact on society. This complicated task involves building a toolkit that is sensitive to structural intricacies, like shape, as well as uniformity of chemical processes that dictate nanomaterial design. Motivated by both designs that are successfully created from concept and serendipitous discovery, Dr. Skrabalak and her team view chemical synthesis as a creative approach to making sense of the world and the materials needed for new applications.

Current research includes:

- Fundamental Research: Dr. Skrabalak, is...

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## AFFILIATION



Indiana University Bloomington

## EDUCATION

- Postdoctoral Research, in Chemistry and Biomedical Engineering, 2007 - 2008 , University of Washington
- Ph.D. in Chemistry, 2006 , University of Illinois, Urbana-Champaign
- B.A., in Chemistry, 2002 , Washington University in St. Louis

## AWARDS

- 2014 Camille Dreyfus Teacher Scholar Award
- 2014 ACS Award in Pure Chemistry
- 2013 Alfred P. Sloan Foundation Fellow
- 2013 DOE Early Career Award
- 2010 NSF CAREER Award

## RESEARCH AREAS

Technology, Chemistry, Materials Science / Physics, Nanotechnology

## FUNDING REQUEST

Your contributions will support the continued research of Dr. Sara Skrabalak, of Indiana University, as she develops nanomaterials with high levels of structural precision. Donations will fund the necessary personnel for these projects, and their research infrastructure. In choosing to donate, you will play a role in developing new approaches to nanomaterial synthesis and design for novel systems.